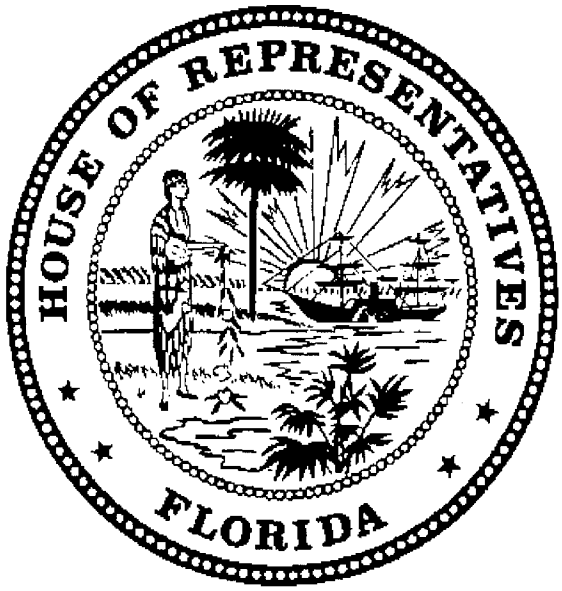
Florida House of Representatives

AERIAL FIRE SUPPRESSION



Committee on Agriculture

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Florida House of Representatives
State Resources Council
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AERIAL FIRE SUPPRESSION

SUMMARY:

The risk of wildfire is not a seasonal problem for Florida. It is a year-round threat.

The state has experienced some horrible fire seasons, especially from 1998-2001. Hundreds of thousands of acres, plus homes and other structures, have been lost since 1998.

Charged by statute with having the power and authority "to prevent, detect, suppress, and extinguish wildfires wherever they may occur on public or private land in this state ..."[1] the Florida Department of Agriculture and Consumer Services' Division of Forestry (DOF) uses much specialized equipment for wildfire prevention and firefighting, including specially equipped helicopters used in fire prevention and suppression and fixed wing airplanes used for detection and fire intelligence. According to DOF, the use of helicopters to protect structures and ground crews has proven itself over and over in Florida and across the nation as being the most effective way of suppressing fire and protecting improvements in the wildland urban interface.

Recently, a large, seven-year contract for the use of fixed wing single engine air tankers (SEATs) has been proposed to aid the DOF's aerial fire suppression effort. The proposal explains that the primary role of *Instant Response* is wildfire suppression, with the key being early detection and early delivery of retardant to slow the progress of a wildfire, allowing DOF crews, as well as local and volunteer fire departments, to contain and suppress the fire in a safe and controlled environment. For the full scale Instant Response program, as proposed, the total cost for the contract is $81.5 million over a seven year period. However, *Instant Response* also has plans for a pilot program setting up one or two bases to cover specific areas of the state.

Development and growth continue in Florida, bringing an increased amount of wildland/urban area interface. While there remain large areas of open expanse in certain areas, much of the state is either densely populated and/or densely vegetated. From the information gathered and presented in this report, it appears DOF's current approach is well suited to the state's aerial firefighting needs. While the *Instant Response* proposal offers benefits to the state, the costs associated with these benefits are substantial when compared with current expenditures.

INTRODUCTION:

The risk of wildfire is not a seasonal problem for Florida. It is a year-round threat. Though Florida is the lightning capital of the world, human-caused fires outnumber those started by lightning. Arson and escaped debris burning are the two main causes of Florida wildfires.

Wildfires can cause major environmental, social and economic damages, including: loss of timber, wildlife habitat, homes and even lives. Florida's overall terrain and

[1] Section 590.02(1)(b), Florida Statutes

growing areas of urban/wildland interface require a diverse approach to wildfire control.

Florida has experienced some horrible fire seasons over the past several years. Hundreds of thousands of acres, plus homes and other structures, have been lost since 1998. Following is a table depicting acreage burned over the last eight calendar years.[2]

Calendar Year	Acres burned
1998	506,970
1999	355,239
2000	210,851
2001	403,737
2002	56,835
2003	27,492 (lowest recorded)
2004	159,193
2005	27,146 (through 11/27/05)

The Florida Department of Agriculture and Consumer Services' Division of Forestry (DOF) uses specialized equipment for wildfire prevention and firefighting, with an important part of that effort being its aviation program. Specially equipped helicopters are used in fire suppression and a fleet of fixed wing airplanes is used for detection and fire intelligence during suppression activities.

The use of aircraft to drop fire retardant, foam, or water to suppress wildfires is an essential wildland firefighting tool. The speed, mobility and retardant delivery capability of aerial firefighting aircraft make them very effective resources in support of firefighters on the ground. The variety of aircraft available within the United States provides capability for nearly every wildland fire situation, from wilderness to the urban interface.

[2] Florida Division of Forestry statistics

Over the past 2-3 years, some Agriculture Committee and Agricultural and Environmental Appropriations Committee members have been approached about the possibility of the state using single engine air tankers (SEATs) for wildfire suppression. Such use would be through contract with private industry to provide the aerial support. Proponents of SEATs believe the rapid response time and sometimes larger payload capabilities make SEATs the best means of aerial fire suppression. The DOF, on the other hand, believes the helicopter to be the most versatile and effective aircraft for wildland fire suppression in Florida.

BACKGROUND AND HISTORICAL INFORMATION:

There are three primary types of aerial firefighting aircraft available within the United States.

Multi-Engine Airtankers: Ex-military and retired commercial transport aircraft make up this category. Carrying from 800-3,600 gallons of retardant, these airtankers typically make drops from a height of 150 to 200 feet above vegetation and terrain, at airspeeds from 125 to 150 knots. Large fixed-wing airtankers have complex, computer controlled retardant dispersal systems capable of both precise incremental drops and long trailing drops one-fourth of a mile or more in length. Retardant flow rates can also be controlled to vary the retardant coverage level dispersed as required by the intensity of the fire behavior and vegetative fuel type.

Helicopters: Small, medium and large helicopters carry from 100 to 3,000 gallons of water, foam, or retardant in either buckets slung beneath the aircraft, or in fixed-tanks. Large helitankers can be very cost effective, making rapid multiple drops of 2,000 gallons or more on escaping wildfires by refilling at nearby water sources or at portable retardant bases. They also provide

a unique capability to those urban/wildland fire interface situations near water sources where they can bring to bear rapid revisit times and precise retardant dropping accuracy. Small and medium helicopters are most effective in the direct support of firefighters on the ground, working in tandem with the DOF tractor/plow units to make precision drops on specific targets.

Single Engine Airtankers (SEATS): These small, fixed-wing aircraft carry from 400-800 gallons of foam or fire retardant. SEATS can operate from remote airstrips and open fields or closed roads, reloading at portable retardant bases. SEATS are predominantly modified agricultural aircraft; however, the 800-gallon Air Tractor 802 is designed specifically for wildland firefighting. SEATS are most effective in the initial attack of small wildfires within 50 miles of a reload base where turn-around times are short and repeated drops can be made quickly.[3]

Florida Department of Agriculture & Consumer Services' Division of Forestry (DOF) Aviation Program

Aircraft: In 1950, the Florida Forest Service (which became the Division of Forestry) acquired its first aircraft, a two-seat Cessna 120. The fleet has since grown to its current fleet of 17 single engine airplanes, 2 twin engine airplanes and 8 helicopters. The single engine airplanes are assigned to 15 field units[4] around the state and are used primarily for fire detection and observation. Based in Tallahassee, the twin engine airplanes are used for transporting firefighters and fire supervisors throughout the state. The helicopters are based at six locations and used for dropping water/foam on fires, aerial ignition for prescribed burning and fire observation. The aircraft can be relocated when a fire situation dictates.

Various approaches to aerial suppression have been tried by the DOF. Beaver, Beech, PBY, and DC-3 airplanes have been operated as single and multi-engine air tankers, with the last of them being used in the early 1980s. In the mid-1980s, the first helicopters were acquired through the Federal Excess Property Program. The UH-1 "Huey" was the primary type used until the late 1990s when the Bell 209 "Cobra" model was added and the UH-1 helicopters were upgraded to the "Super Huey". According to the DOF, helicopters have proven to be very effective in terms of both cost and suppression capability.

To supplement the helicopter fleet, the DOF also contracts with private industry for suppression aircraft when needed. In addition, the Florida Army Air National Guard and agreements with other states in the southeast provide additional aircraft when the situation warrants.

The aviation program has, according to the DOF, developed over the past half century to become a critical resource for the execution of its mission *"to provide safe, cost-effective aviation support to the Division of Forestry in furtherance of its fire control and resource management activities."*[5]

The DOF has access to 17 single engine airplanes. Nine are owned by the state and eight are federally-owned and on loan to the DOF. Per agreement with the United States Forest Service, the federal aircraft are restricted to fire use only. Single engine aircraft are used for smoke sorting[6], fire

[3] *Aerial Firefighting Tutorial,* Aerial Firefighting Industry Association (AFIA), www.afia.com

[4] Appendix B: Field unit locations

[5] Division of Forestry reference material on aerial fire suppression

[6] Smoke sorting is the process of determining the type of fire producing the smoke. The pilot looks to see if it is a wildfire vs. under control, authorized vs. not authorized, whether burn law requirements (setbacks from other homes, adequate equipment on

detection, and as aerial observation platforms providing information to others engaged in fire suppression. With four to six seats each, the aircraft are also used to transport fire personnel, conduct insect and disease survey flights, and assist in DOF law enforcement efforts.

Two multi-engine airplanes, one state-owned and one federally-owned, are based in Tallahassee. With up to four passenger seats each, they are used for transportation of fire personnel and as "air tactical coordinator platforms" when aerial suppression need dictates.

There are currently eight operational helicopters on loan to the DOF from the federal government. Two are Bell OH-58A+ with four seats each. These helicopters are Type III and are used primarily for aerial ignition and observation. They can also be used for suppression and can carry a 75 gallon bucket.

Three helicopters are Bell/DOF UH-1 Super Hueys. The remaining three helicopters are Bell 209 Cobras. The Hueys and Cobras are Type II helicopters primarily used for suppression activity with 320 gallon buckets. The Cobras may also be used for fire observation.

In addition to its fleet of fixed-wing aircraft and helicopters, the DOF has another aerial firefighting resource in the Florida Army Air National Guard (Guard). With authorization from the Governor's office, the Guard will make available its fleet of Blackhawk helicopters stationed at the Guard's facility at the Brooksville Airport. In a partnership ongoing from the early 1980s, the DOF has outfitted the Guard's fleet with radios, crew training, and 600 gallon buckets. During Florida's extreme fire seasons of 1998-2001, the Guard supplied 2-6 aircraft for extended periods of time in all phases of attack. Cost to the DOF is approximately $3,300 per flight hour, plus per diem for the crew.

In late 2004, the Guard added a Firehawk helicopter with a 1,000 gallon tank for combating wild land fires. The Guard has recently received a number of Chinook helicopters which are stationed at St. Augustine. The DOF plans to equip the Chinooks with 2,000 gallon buckets so they can be put into service as firefighting aircraft. The buckets are being purchased with federal grant funds provided to deal with increased wildfire hazards resulting from the 2004 hurricanes.

Personnel: The DOF's aviation program has 38 positions distributed between the Forest Protection Bureau's Aircraft Section and the Field Operations Bureau's various units. In addition to the pilots, there are aircraft mechanic/inspectors, maintenance personnel, administrative personnel and Other Personnel Services' laborers in the aviation program.[7]

The DOF has seven firefighter/Rotorcraft pilot positions. Two positions are located in Tallahassee and Pensacola; Lake City, Ocala, Okeechobee and Ft. Myers have one position each. The normal work schedule is 8:00 a.m. to 5:00 p.m., Monday through Friday. The pilots rotate weekend on-call for response. The number of pilots and locations placed on-call is adjusted based on the current and expected fire conditions. During periods of high fire activity, work schedules and days off are adjusted to maintain maximum response readiness. Pilots maintain a "3-day bag" with the aircraft and are prepared to be relocated anywhere throughout the state without advance notice when fires occur.

scene). Based on the observations and communication with the district dispatch center, fires needing suppression or other action can be "sorted" from those that do not.

[7] Appendix A: Personnel listing & aircraft description

All DOF pilots are wildland firefighters, as well as being experienced pilots. Each pilot is required to have successfully completed more than 500 hours of firefighter training and be certified according to Chapter 633, Florida Statutes, Fire Prevention and Control. Pilots must also meet minimum flight experience requirements based on the type aircraft operated.

CURRENT SITUATION:

DOF tactics and assessment of fire suppression aircraft: According to the DOF, unlike air tankers, helicopters do not rely on a fixed base of operations. A service/fuel truck is dispatched with the helicopters so that complete operations can be set up on-site. Helicopters use local water sources near the fire scene as dip sites.

When a wildfire situation occurs, the DOF employs the following response scheme. On the initial attack of a wildfire, one or more tractor/plow units are dispatched. A helicopter may also be requested. The first on scene (ground unit or helicopter) scouts and sizes up the fire and applies the appropriate tactic depending on values at risk, fuel, terrain and fire intensity.

Tractor/plow units anchor a control line along a natural or manmade barrier and proceed up one of the flanks towards the head of the fire. When success is assured, a frontal assault is made by the tractor/plow and the helicopter. In a situation that involves protecting structures, the aircraft can drop foam or water directly on the fire while the tractor/plow is putting in the control lines.

A frontal assault, putting control lines in front of the head of the wildfire, is the most dangerous tactic. The helicopter, with its quick turn around and pinpoint accuracy, stands out in such situations.[8] Due to the amount and density of ground fuels, heavy smoke reduces visibility for the pilots of air tankers and may prevent them from being able to put retardant directly on the head of a fire.

With its ability to fly at slower speeds and turn away without having to fly straight through the smoke, a helicopter can work bucket drops up from one flank and pinch or "hook" the head of the fire. An air tanker puts the retardant drop in front of the fire's head, with the distance away depending on the angle of the smoke. Such a retardant drop not only slows the fire, but may also catch spot-overs and allow a margin of safety for the tractor/plow operations working in or on the far side of the retardant line.

Wildland urban interface: According to the DOF, the use of helicopters to protect structures and ground crews has proven itself over and over in Florida and across the nation as being the most effective way of suppressing fire and protecting improvements in the wildland urban interface.

When there is time to get control lines around the fire before it gets to the subdivision or structures, the most effective tactic is a helicopter, working in front of the lead tractor/plow unit, dropping foam on the perimeter of the fire. The intensity of the fire is reduced and the tractors are allowed to work in a much safer environment. Rarely can a wildfire be extinguished with air resources alone. Firefighters and equipment on the ground are needed to complete the process of suppressing and mopping up.

If the fire has grown to where construction of a control line will take some time, a line may be constructed using one or more air tankers. Retardant is put on the fire perimeter or just beyond the perimeter to slow or retard the fire's spread and allow

[8]Division of Forestry: *Aircraft Use in Wild land Fire Suppression*

time for the tractor/plows to establish permanent control lines.

In a reinforced attack situation where the initially dispatched equipment did not contain or control the fire and additional equipment has been ordered to respond, air tankers are the tools to put in the long lines of retardant giving the ground force the extra time it takes for containment. After the air tanker drops have been completed, helicopters are used for protecting structures, cooling hot spots along the control lines and attacking spot-overs from the main fire. These measures allow the ground forces added time and provide a safer work environment. Regarding SEATS, the DOF states that, when utilized properly, they can be a highly effective resource, but unrealistic expectations should not be placed on them.[9] SEATs are most effective firefighting tools in open terrain such as range land or the Everglades.

Why helicopters? The DOF believes the most versatile and effective aircraft for wildland fire suppression in Florida is the helicopter[10]. This belief is based on quick turn-around times at the fire scene (due to the available water sources), ability to fuel on-site, its workability in the wildland urban interface (areas where urban growth is encroaching on natural, wild lands), its ability to land in areas where there is no air field/runway, and its flexibility to perform reconnaissance and aerial ignition missions.

Due to Florida's abundant water resources and the availability of "dipable" water, the DOF has elected to develop a fleet of fire suppression helicopters. With the folding "Bambi Buckets", the water depth requirement is 3 feet. For tank/snorkel equipped helicopters, the depth requirement is 18 inches.

Turn-around times on helicopter drops are under the effective rating of 5 minutes and usually less than 2.5 minutes, even with drought conditions. In this short time, Type II helicopters (Bell 209 Cobras and Super Hueys) can deliver 7,682 gallons of foam or water per hour, thus helping to ensure that tractor operators do not get into a potentially dangerous situation. In addition to allowing the quick delivery of foam and water to the fire, helicopter pilots can maintain visual contact with the tractors and ground crews. With the dense undergrowth and fuel levels encountered in many Florida fires, the firefighter on the ground often loses visual contact with the fire perimeter and relies on the aircraft to be his "eye in the sky". Helicopters can hover and target fire flashes happening right on top of a tractor.

Suppression Capability

Aircraft Type	Capacity	Time Between Drops	Gallons per Hour
Type II Helicopter	320 gal.	2.5 minutes	7,680
Type I Air-Tanker	3000 gal.	1 hour	3,000
Single Engine Air-Tanker	799 gal.	15 minutes	3,196

Fire Season Statistics

Year	# of Fires	Average Response Time	Aircraft Cost per Hour (average)
2003-2004	68	28 minutes	Type II -- $660 Type III -- $380
2004-2005	25	30 minutes	Type II -- $660

The average acreage burned by wildfires in 2003-2004 was 720.7 acres. In 2004-2005, the average acreage burned was 97.69 acres.

[9] Division of Forestry: *Effective and Efficient Use of Single Engine Air Tankers*

[10] Division of Forestry reference material on aerial fire suppression.

Federal Excess Property Program: An additional reason for the DOF using helicopters is the availability through the Federal Excess Property Program (FEPP). The FEPP allows for property owned by the United States Forest Service (USFS) to be loaned to state forestry agencies for fire protection at a significant cost savings. Airplanes, helicopters, aircraft parts, special tooling and ground support equipment are examples of the types of items the DOF has available through this program. Much of the available property was previously used by the military, including the DOF helicopter fleet. Nine of the fixed-wing aircraft were acquired through the FEPP program from various non-military sources. The total value of FEPP inventory used in the DOF aircraft section exceeds $64 million.

The DOF does not pay to acquire FEPP items; however, there are costs associated with making some of the items ready for use. The cost of picking up or shipping the items and then preparing them for firefighting is borne by the DOF. The DOF has spent an average of $1 million to refurbish, upgrade and place each "Super Huey" in service. To purchase an equivalent helicopter outright would cost about $3 million. A FEPP Bell 209 can be placed in firefighting service for $250,000.

After helicopters are placed in service, additional cost efficiencies are realized because a major portion of the tools and parts needed to maintain them also come through the FEPP. In FY 2004-2005, the DOF used FEPP parts valued at over $327,000. Since 1998, more than $2.8 million in FEPP parts have been used to upgrade and maintain the aircraft in the DOF aviation section. The DOF also maintains a parts inventory worth more than $12 million.

According to the DOF, its current aerial fire suppression capabilities are due in large part to participation in the FEPP. Federal excess equipment brings valuable service to the state without the high cost of acquisition. Florida's citizens benefit with increased fire suppression capability and the savings of tax dollars through the DOF's partnership with the USFS.

Contracts for additional resources: When wildfires exceed the DOF's resources and additional helicopter and/or air tanker support is needed, it is acquired through contractual arrangements with other entities. Call-when-needed contracts are in place nationwide through the USFS or through a state forestry agency compact such as the Southeastern Compact, of which Florida is a member. Availability costs are shared with the USFS and flight time is paid by the agency using the resource. Personnel and management costs are also on a shared basis.

In addition to assistance available from the USFS and other states, the DOF contracts with **private industry** for additional support on an as-needed basis. Two contracts are currently in place, one for additional helicopter support and one for SEAT support. The contract for helicopter support is with Brainerd Helicopters, Inc. in Leesburg. Air tanker support is through a contract with Airwork Enterprises of Florida, Inc. in Immokalee. These aircraft are interagency "carded", meeting their respective national standards. Additional aircraft of all types are available on national contracts through the DOF's agreement with the USFS.

Other southeastern states:[11] Aerial fire suppression techniques in other southeastern states vary.

- The **Alabama Forestry Commission** (AFC) does not, at this time, own any helicopters or aerial tankers. The state previously owned

[11] Telephone interviews with representatives of the Alabama Forestry Commission, the Georgia Forestry Commission, and the North Carolina Division of Forest Resources

helicopters through the FEPP; however, maintenance costs were very high and the aircraft were not much used. The AFC has 10 fixed wing scout planes and contracts for an additional four scout planes. When houses or structures are threatened by wildfire, Alabama National Guard helicopters and buckets are called in. No SEATs are used.

- The **Georgia Forestry Commission** (GFC) uses helicopters for its aerial fire suppression efforts. According to the GFC representative, most wildfires in Georgia average five acres in size. Whether or not helicopters are called is dictated by the fire activity.

- The **North Carolina Division of Forest Resources** (DFR) uses a variety of aircraft types for aerial suppression. Huey helicopters (4 operational, 1 spare) are used to transport fire crews to mountain areas. The Hueys are also equipped with water buckets. In addition, the DFR has a European-style 350B3 helicopter used for igniting prescribed burns. It, too, can carry a water bucket. For fire retardant delivery, a Dromader SEAT is used. The airplane was modified extensively to enable it to carry 500 gallons of retardant. Finally, the DFR has a fixed-wing CL215 that can scoop 1,400 gallons of water "on the fly". Retardant foam is injected into the water. A disadvantage of this airplane is that a "sizable" body of water is required to allow the aircraft to scoop.

U.S. Forest Service: Per conversations with its Florida personnel, the U.S. Forest Service does not use SEATs much in the state. Such aircraft are more effective in the grassy and coastal areas. The helicopter is more accurate and can fly lower, more effectively targeting the fire, especially smaller fires. For larger fires, larger air tankers are called in. Helicopters are also used to drop incendiary ping-pong balls for "burnouts" that need to be done quickly to prevent a fire from spreading.

SEATs, an alternative proposal: In April 2004, some citizens in private industry contacted the Governor and members of the Legislature with a proposal for an aerial fire suppression program called *Instant Response*. To quote from the proposal, "*Instant Response* aerial fire suppression is a long-term approach (five to seven year contract) to wildfire suppression based on:

- Closely working and coordinating with State forestry, local and volunteer fire departments.
- Complete and continuous spotter aircraft coverage of contracted area producing timely information on wildfire activity.
- Instant response from single engine fixed wing air tankers when wildfire in contracted area is reported.
- Active and aggressive program to systematically thin, clear, and control burn excessive fuel loading in the State of Florida."[12]

The proposal explains that the primary role of *Instant Response* is wildfire suppression, with the key being early detection and early delivery of retardant to slow the progress of a wildfire, allowing DOF crews, as well as local and volunteer fire departments, to contain and suppress the fire in a safe and controlled environment.[13]

In addition, the proposal states that research shows that wildfires in Florida can be controlled if attacked in the first 20 minutes,

[12] *Instant Response:* An Effective Approach to Aerial Wildfire and Agricultural Pest Control Multi-task Wildfire and Agricultural Support Proposal

[13] Ibid.

when the fire is not larger than 2½ acres. Therefore, it is *Instant Response's* goal to be at a reported wildfire within approximately the first 20 minutes.[14]

The proposed program is summarized in the following paragraph taken from information provided by *Instant Response* proponents.

"Instant Response aerial fire suppression multi-task aerial support is a new, cost effective approach to turn key, performance based, private contracts designed to protect the health, safety and welfare of the State of Florida, its citizens and natural resources on a twenty-four hours, seven days a week basis."[15]

To cover the entire state, the *Instant Response* proposal includes eight tanker bases located so that no part of Florida is more than 20 minutes flying time from a base. Permanent facilities at each base include hangars, loading and fuel facilities, communications capabilities and offices.[16] Aircraft proposed for use by *Instant Response* include AT (Air Tractor) 802 and 802F 800 gallon air tankers for fire suppression, and Cessna 210 Forward Observation aircraft and Cessna High Wing spotter aircraft for continuous observation activities. *Instant Response* proponents believe SEATs to be more reliable than helicopters.

Instant Response also proposes to meet the state's needs for mosquito, dog fly and other aerial spraying.

Proposal methodology: *"This proposal is based on a five-year contract. If all phases are implemented at the same time, they would all be up for renewal in five years. After the first five-year period in the event of a contract renewal, there will be a significant reduction in cost per year to the State. If the following example was implemented - Phase I with three bases put in the first year, Phase II with an additional base added the second year, and Phase III with a final base added the third year - the first Phase would need to be contracted for seven years in order for the Phases to come up for renewal simultaneously. The second Phase would need to be contracted for six years, and the final Phase for five years."* [17]

Per the proposal, *"The intent of this contract is to provide spotter aircraft with pilots to patrol contracted area and report wild fires to the Florida Division of Forestry and to the Instant Response Tanker Base.*

The Instant Response Tanker Base will dispatch 800 GAL Airtractor 802 tankers to reported wild fire location. The Florida Division of Forestry will dispatch appropriate ground equipment - transport crawler tractor with fire line plow, type VI engine, Urban Interface Unit, heavy dozer, etc.

The 802 Air Tanker, depending on conditions, will drop water, foam, and retardant on wildfires, slowing its progress and allowing the State Forestry crews to contain and suppress the fire in a safe environment. Instant Response will provide water and foam for aerial fire suppression. The State will provide long-term retardant for aerial fire suppression.

These aircrafts can also be utilized in the off-season for State and other governmental agencies for agricultural support in the

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[14] Ibid.

[15] Executive Summary of *Instant Response* proposal to State of Florida.

[16] *Instant Response* Operations and Objectives Statement

[17] *Instant Response:* An Effective Approach to Aerial Wildfire and Agricultural Pest Control Multi-task Wildfire and Agricultural Support Proposal -- Methodology

control of other nuisance pests[18] *at a substantially reduced cost."*[19]

COSTS:

***Instant Response* Proposal –**

Cost to the state for Phases I-III of the *Instant Response* proposal is $81.5 million over a seven year period, broken out as shown below:

Phase I: $8.5 million per year for 7 years
Phase II: $2 million per year for 6 years
Phase III: $2 million per year for 5 years

Per the proposal's sponsor, each SEAT (Air Tractor 802) is $1 million and the life of the aircraft is projected to be 20 years. Once the initial five year contract is up, the aircraft will be paid for and the price per base or station per year will drop. Setup costs for the first station are projected to be $3.5 million. Included are the initial corporate costs, radio equipment and setup, emergency (911) connections, etc. Cost for each additional station would be $2.5 million.

Division of Forestry (DOF) –

According to the DOF, access to equipment through the Federal Excess Property Program (FEPP) provides major savings to the state. Information in the following tables compares the cost of refurbishing FEPP helicopters with the cost of purchasing comparable new ones.

Cost to refurbish and place FEPP aircraft into service:

OH-58	$ 110,000
Super Huey	$1,000,000
Bell 209	$ 250,000

New helicopter prices:

Bell 206 (OH-58)	$900,000
Bell 210 (Super Huey)	$3,000,000

The following table depicts the annual cost to the state, since 1998-1999, for the DOF's aircraft fleet maintenance.

1998-1999	$196,142
1999-2000	$399,698
2000-2001	$872,997
2001-2002	$511,910
2002-2003	$435,338
2003-2004	$256,690
2004-2005	$193,395
Total	**$2,866,170**

A sizable parts inventory, much of which comes from the FEPP, is maintained by the DOF. Further savings are realized by the DOF not having to purchase parts on the open market. In addition, the ability to call on the Florida Army Air National Guard's helicopter fleet when necessary provides savings. Cost to the DOF is approximately $3,300 per flight hour, plus per diem for the crew.

Appendix C presents DOF's direct costs for helicopter suppression since fiscal year 1998-1999. Also displayed is a breakout of the DOF aircraft section operating costs.

Specific costs to the DOF for its contracts with private industry for additional helicopter and SEAT support are outlined in the following paragraphs.

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[18] According to the Department of Agriculture & Consumer Services (DACS), no aerial sprays have been applied since 1998 for fruit flies or other pests regulated by the Division of Plant Industry. Through the Sterile Fly Aerial Release program, the United States Department of Agriculture (USDA) approximately 6 billion sterile flies are released by aircraft per year. USDA handles the aerial release and DACS provides support through trapping, fly identification, and assisting in purchase of sterile flies.

[19] *Instant Response:* An Effective Approach to Aerial Wildfire and Agricultural Pest Control Multi-task Wildfire and Agricultural Support Proposal – Scope of Contract

DOF contract with Brainerd Helicopters, Inc. for Type 1 helicopter support:

- Sikorsky s-70c firehawks @ $4,250/flt. hr first day
- Additional deployment = $8,000 a day and $3,250/flt hr. plus support vehicle@ $2.40/mile and travel for pilot and crew
- Contract not to exceed $24,000 annually

DOF contract with Airwork Enterprises of Florida, Inc. for SEAT support:

- Air Tractor 802 @ $1,375/flt. Hr
- Standby for 8 hour day = $1,360 plus support vehicle @ $2.40/mile and travel for pilot and crew
- Contract not to exceed $25,000 annually.

CONCLUSIONS:

Florida's need for aerial fire suppression vary from year to year based on weather conditions, fuel load on the ground, and how careful citizens are when burning debris or using fire in any manner. Since 1950, agencies responsible for wildfire protection in the state have used some form of aircraft in fire prevention, detection, and/or suppression efforts.

As the population of the state has grown and previously "wild" land has been developed, the state's firefighting tactics have had to change. The shift from fixed wing aircraft to helicopters began in the 1980s when the air tankers were phased out and the FEPP made acquisition of helicopters possible.

Development and growth continue in the state, bringing an increased amount of wildland/urban area interface. While there remain large areas of open expanse in parts of Florida, much of the state is either densely populated and/or densely vegetated. From the information gathered and presented in this report, it appears the helicopter is well suited to the state's aerial firefighting needs. The access to aircraft through the FEPP and the ability of the DOF to rebuild and recondition equipment and to purchase parts at military cost, significantly less than civilian cost, provide cost efficiencies to the state.

At times, however, there is also a definite need for air tanker support, as is currently available from the U. S. Forest Service, interstate compacts, the Florida Air National Guard, and contracts with private industry. With the amount of fire fuel load left by the hurricanes of 2004-2005, any available assistance may be called upon should Florida experience a lengthy dry season.

The *Instant Response* proposal, using SEATs for wildfire suppression, is based on many years firefighting experience and analysis of firefighting needs in many other areas of the United States, as well as Florida. The proposal's goal is early detection and early delivery of retardant to slow the progress of a wildfire, which should be a major part of any aerial firefighting effort. The total cost for the contract as proposed, however, is $81.5 million over a seven year period. Helicopter and ground support would still be needed.

During FY 2003-2004, the total DOF aviation program annual operating cost was $1,125,000, including 600 hours of medium helicopter flight time. Salary and benefit costs for that period were $2.8 million. If the *Instant Response* program were in place, these costs might decrease somewhat; however, much of the equipment, expertise, and manpower of the DOF program would still be necessary to the overall aerial fire suppression effort.

Florida has been fortunate over the last four years to have not had any fire seasons similar to those experienced from 1998-2001. Through these less active years the DOF's aviation program has been able to focus on assisting with prescribed burning, reconditioning equipment, and refining the

overall aerial fire suppression program in preparation for the next major fire season.

The *Instant Response* proposal offers an approach to fire suppression that optimally could compliment Florida's current helicopter-focused approach. However, the cost of the proposal and the DOF's belief that the helicopter best meets the state's fire suppression needs raise serious questions regarding the suitability of the proposal as an alternative strategy.

Division of Forestry Aviation Program

Forest Protection-Aircraft Section
(14 Positions)
1 - Administrative Assistant
1 - Air Tactical Coordinator
1 - Aircraft Maintenance Administrator
1 - Aircraft Mechanic
1 - Aircraft Mechanic Supervisor
3 - Aircraft Mechanic/Inspector
1 - Aviation Manager
2 - Firefighter/Rotorcraft Pilot
1 - Multi-engine Airplane Pilot
1 - Property Administrator
1 - Property Specialist

Field Operations
(24 Positions)
2 - Aircraft Mechanic
3 - Aircraft Mechanic/Inspector
5 - Firefighter/Rotorcraft Pilot
1 - Multi-engine Airplane Pilot
13 - Single-engine Airplane Pilot

AIRCRAFT

Single Engine Airplanes
There are 17 single engine airplanes. These aircraft are light piston engine airplanes with four to six seats. Nine of the airplanes are owned by the state and eight are federally owned aircraft on loan to the Division of Forestry. The federal aircraft are restricted to fire use only by agreement with the U. S. Forest Service. The aircraft are used by the field units for smoke sorting, fire detection, and serve as an aerial observation platform providing information to others engaged in fire suppression. They are also used for other purposes such as transporting fire personnel, conducting insect and disease survey flights, and assisting in the law enforcement efforts of the division.

Multi-Engine Airplanes
The division has two multi-engine airplanes. One is state owned and the other federal. They are twin piston engine powered airplanes that seat up to four passengers in addition to pilot and copilot seating. They are based at the Tallahassee Airport and are used for transportation of fire personnel and operate as an air tactical coordinator platform when aerial suppression need dictates.

Helicopters
There are currently 8 operational helicopters and all of these are federal aircraft loaned to the Division. Two are Bell OH-58A+, a light turbine powered helicopter with four seats. These are primarily used for aerial ignition and observation. They are also used for suppression and can carry a "bucket" with a 75 gallon capacity. Three are Bell/DOF UH-1 Super Hueys, a medium turbine powered helicopter. These helicopters are used primarily for suppression and carry a "bucket" with a 320 gallon capacity. They can also be used for aerial ignition, observation and crew transportation. Three are Bell 209 "Cobras", a medium turbine powered helicopter with two seats. These also are used primarily for suppression but can also be used for fire observation.

Appendix B

Division of Forestry Aviation Program: Aircraft and Locations

Helicopters
(8 Helicopters)

Type III
2 - Bell OH-58A+

Type II
3 - Bell/DOF UH-1 Super Huey*
3 - Bell/DOF 209

* One additional UH-1 undergoing modification at Ft. Drum, New York

Airplanes
(19 Airplanes)

Single Engine
1 - Cessna P-206A
13 - Piper PA-28
3 - Piper PA-32

Multi-Engine
2 - Piper PA-31

AIRCRAFT LOCATIONS

FIELD UNIT	AIRPORT	AIRCRAFT TYPE
Blackwater Forestry Center	Whiting Field NAS Peter Prince Field	**209** PA 32
Chipola River District	Panama City-Bay County Int'l	PA 28
Tallahassee District	Tallahassee Regional	PA 28
Tallahassee - Aircraft Section	Tallahassee Regional	**209** **OH-58A+** PA 31 PA 28
Perry District	Perry-Foley	PA 28
Suwannee District	Lake City Municipal	**209** PA 32
Jacksonville District	Cecil Field	PA 28
Waccasassa Forestry Center	Gainesville Regional Ocala Int'l	PA 28 **UH-1 Super Huey** **OH-58A+**
Bunnell District	Flagler County	PA 28
Withlacoochee Forestry Center	Crystal River	PA 28
Orlando District	Kissimmee Gateway	PA 28
Lakeland District	Lakeland Linder Regional	P 206A
Myakka River District	Sarasota/Bradenton Int'l	PA 28
Okeechobee District	Okeechobee County	**UH-1 Super Huey** PA 28
Caloosahatchee District	Page Field	**UH-1 Super Huey** PA 28
Everglades District	North Perry	PA 32

Appendix C

HELICOPTER SUPPRESSION - DIRECT COSTS

Year Ending	6/30/99	6/30/00	6/30/01	6/30/02	6/30/03	6/30/04	6/30/05
Suppression hours	431.8	387.7	364.9	224.0	119.6	136.6	56.0
Cost	$284,988	$255,157	$238,351	$144,632	$76,732	$206,278	$34,951

Cost is based on our average hourly direct operating cost of $660/hr for the UH-1/Bell 209 and $381/hr for the OH-58.

AIRCRAFT SECTION OPERATING COSTS

Year Ending	Salary	OPS	Expense	OCO	On-call	Total
6/30/05	$738,019.63	$24,828.05	$801,387.19		$808.45	$1,565,043.32
6/30/04	$786,180.72	$35,934.91	$1,090,996.80		$2,175.35	$1,915,287.78
6/30/03	$756,753.73	$25,649.84	$1,124,981.83		$2,410.76	$1,909,796.16
6/30/02	$699,267.45	$48,625.85	$1,489,150.00	$49,655.50	$3,663.67	$2,290,362.47
6/30/01	$720,552.84	$33,265.56	$2,138,979.54	$147,652.60	$2,453.68	$3,042,904.22
6/30/00	$597,423.90	$12,368.01	$3,220,030.59	$981,394.48	$986.37	$4,812,203.35

Notes:

1. Salary is for personnel in the Forest Protection – Aircraft Section. The salary and on-call for field unit pilots and mechanics is paid through their respective units.
2. The majority of the OCO funding in 2000, 2001 and 2002 was used to establish the five field helicopter bases (service trucks, fuel trailers, tools, etc.).
3. The following amounts, included in the expense figures, were for helicopter reconditioning and upgrade to bring our helicopter fleet from 3 to 8:
    a. 2000 - $1,820,499.98
    b. 2001 - $848,992.35
    c. 2002 - $569,830.94